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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Hideki Ichihashi

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EXAMINER

GILLESPIE, BENJAMIN

ART UNIT

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/595,761	Applicant(s) ICHIHASHI ET AL.	
	Examiner BENJAMIN J. GILLESPIE	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6 and 7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6 and 7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 103

The following is a quotation of the appropriate paragraph of 35 U.S.C. 103(a) that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ube (EP 1,149,850) in view of Cox et al ('477). Ube teach polyester polyol that is reaction product of diol and dicarboxylic acid, and said polyester has a molecular weight ranging from 1,500 to 15,000 (Abstract). The dicarboxylic acid comprises both aromatic and aliphatic compounds, specifically terephthalic acid and dodecanedioic acid, and the diol consists of dodecane diol (Paragraphs 8, 15 and 16). Patentees go on to explain that polyester polyol is then reacted with polyisocyanate, thereby forming a polyurethane prepolymer, which is useful as a hot-melt adhesive and may further comprise plasticizer, tackifier, and antioxidants (Paragraphs 3, 23-26). Finally, Ube explain the hot-melt adhesive can bond substrates such as wood and metal, however patentees fail to teach how much aromatic dicarboxylic acid is included in the polyester polyol (Paragraph 27).

2. Cox et al also teach hot-melt adhesives comprising polyester polyol, which is the reaction product of dicarboxylic acid and diol (Abstract). In particular, the acid consists of both aromatic and aliphatic compounds such as terephthalic acid, and C₁₂ aliphatic acid, i.e. dodecanedioic acid, as well as C₁₂ diol, i.e. dodecane diol (Abstract; col 1 lines 64-68; col 2 lines 1-9).

Furthermore, the hot-melt adhesive comprises plasticizers, and tackifying resins, and is useful in

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bonding wooden substrates (Col 2 lines 20-21). What is important to note, however, is that the aromatic and aliphatic acids are present in amounts ranging from (70-100):(0-30) mol% respectively, and Cox et al explain that this formulation results in polyester having a melt temperature as low as 90 °C as well as desirable flow properties without the sacrifice of bond strength (Col 1 lines 16-17, and 43-52).

3. Therefore, it would have been obvious to adjust the amounts of aliphatic and aromatic dicarboxylic acid in Ube et al based on the formulation of Cox et al, since Ube and Cox et al teach analogous compositions that are directed towards polyester based hot-melt adhesives that bond the same substrates, and the specific amounts of aromatic and aliphatic acid contribute to improved processability without loss of mechanical performance.

4. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krebs et al (2003/0144454) in view of Ube (EP 1,149,850) and Cox et al ('477). Krebs et al teach polyurethane hot-melt adhesive based on polyester polyol and polyisocyanate, wherein said polyester has an average molecular weight as high as 10,000, and the final composition is useful in bonding wooden substrates (Abstract; paragraphs 11-14, 32). In particular, the polyester polyol is the reaction product of dodecanediol diol, and a mixture of aromatic and aliphatic dicarboxylic acids, such as terephthalic and dodecanedioic acid. Although the relevant reactants are disclosed, Krebs et al fail to teach them with sufficient specificity, and no ratio of aliphatic and aromatic dicarboxylic acid is listed.

5. As previously discussed, Ube teach hot-melt adhesives based on polyester polyols comprising the reaction product of terephthalic acid, dodecanedioic acid, and dodecanediol. In particular, patentees explain that these reactants are preferred because they result in hot-melt

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adhesives that exhibit sufficient bond strength while maintaining rapid set time (Paragraph 9).

Therefore, it would have been obvious to limit the reactants of Krebs et al to relevant species of Ube, based on the motivation that it facilitates application of the adhesive without losing mechanical strength.

6. Furthermore, as previously discussed, Cox et al teach polyester based hot-melt adhesive that is produced by reacting relevant compounds in amounts that satisfy applicants' claims, and what's more, Cox et al explain the resulting adhesive has desirable flow properties without the sacrifice of bond strength (Col 1 lines 43-52). Therefore, it would have been obvious to adjust the amounts of aliphatic and aromatic dicarboxylic acid in Krebs et al based on the formulation of Cox et al, since Krebs et al and Cox et al teach analogous reactants directed towards polyester based hot-melt adhesives useful in bonding the same materials, and the specific amounts of aromatic and aliphatic acid contribute to improved processability in adhesives without loss of mechanical performance. Finally regarding claims 3 and 4, although not explicitly disclosed by the prior art, one of ordinary skill would reasonably expect the rendered obvious polyester to exhibit the same properties based on identical reactants and amounts that are the same as claimed by applicant.

Response to Arguments

7. Applicant's arguments with respect to the rejection of claims 6 and 7 as being unpatentable over

- a. Ube (EP 1,149,850) in view of Unitika (JP 62-043451), and
- b. Krebs et al (2003/0144454) in view of Ube (EP 1,149,850) and Unitika (JP 62-043451).

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8. Have been considered and are persuasive, the rejections have been removed.
9. Applicant's arguments with respect to claims 6 and 7 as being unpatentable over Ube (EP 1,149,850) in view of Cox et al ('477) and Krebs et al (2003/0144454) in view of Ube (EP 1,149,850) and Cox et al ('477) have been considered but are not persuasive. Applicants argue the claimed invention is patentable because:
 - a. While Ube gives a general teaching that the polyester may comprise both aliphatic and aromatic dicarboxylic acid, the example are limited only to aliphatic compounds, and therefore Ube is "not enabled with respect to the aromatic dicarboxylic acid,"
 - b. One would not be motivated to arrive at applicants' specifically claimed ranges of 85-99 and 15-1, which applicants alleged provide an unexpected advantage when the aromatic and aliphatic dicarboxylic acid are utilized in these amounts, and
 - c. One would not be motivated to include the polyester polyol of Cox in Ube since it has a high melting point that would require NCO + OH reaction temperatures greater than 130°C, which causes the unwanted formation of allophanate groups.
10. In response to issue **a** the examiner notes that the examples are only limited to aliphatic compounds, however, a reference is not limited to what the examples teach, and paragraph 16 of Ube clearly teaches that a mixture of aromatic and aliphatic dicarboxylic acids are suitable. Furthermore, **in view of Cox**, one would be motivated to include both aliphatic and aromatic dicarboxylic acid since it is disclosed as being useful in hot-melt adhesives. Moreover,

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applicants' position appears to be an unsubstantiated opinion, which has not been supported by any type of factual data. Where it is alleged that a reference is not an enabling disclosure of applicants' invention, the burden is on applicants to introduce evidence to that effect and not merely opinion of same. *In re Fracalossi* 215 USPQ 569, 570.

11. Regarding issue **b**, applicants' remarks concerning the alleged unexpected properties attributed to the 85-99% and 1-15% mol range have been noted, however, claim 6 allows for C₁₀ to C₁₂ dicarboxylic acid, C₁₁ to C₂₀ diol, as well as *any* type of aromatic dicarboxylic acid. Conversely, applicants' examples only utilize a single aromatic and aliphatic dicarboxylic acid, as well as a single aliphatic diol. With this understanding, the examiner would like to point out that evidence of superiority must pertain to the full extent of the subject matter being claimed. *In re Ackermann*, 170 SPQ 340; *In re Chupp* 2 USPQ2d 1437, 1440; *In re Murch*, 175 USPQ 89; *Ex Parte A*, 17 USPQ2d 1719. Accordingly, it has been held that to overcome a reasonable case of prima facie obviousness a given claim must be commensurate in scope with any showing of unexpected results. *In re Greenfield*, 197 USPQ 227. Therefore, applicants' remarks are not persuasive since applicants' showings are not commensurate in scope with currently claimed invention.

12. Finally regarding issue **c**, the examiner disagrees with the polyester of Cox would require a reaction temperature of at least 130°C; Cox clearly teaches that the resulting polyester polyol has a melting temperature as low as 90°C, not 130°C (Cox; col 2 lines 16-17). Furthermore, the examiner would like to point out that even if the melting temperature of Cox was 130°C, one of ordinary skill would understand that the polyester polyol can be dissolved in solvent at conditions lower than the melting temperature, which Ube allows for (Paragraph 24 of Ube).

Finally, applicants' position that allophanate groups definitely form at 130°C has not been supported by any type of factual data, and appears to be an unsubstantiated opinion, which is not persuasive.

13. Patentees also argue the claimed invention is patentable over Krebs et al (2003/0144454) in view of Ube (EP 1,149,850) and Cox et al ('477) because Krebs et al teach two separate isocyanate-terminate prepolymers, wherein neither prepolymer contains blocks based on both aromatic and aliphatic dicarboxylic acid; the examiner disagrees. It is noted that the first block of Krebs et al discussed on paragraph 15 is limited to only aliphatic compounds, however the second polyester described on paragraph 22 is clearly open to having blocks of both aliphatic and aromatic dicarboxylic acid. Furthermore, applicants' currently claimed invention does not preclude the presence of two different isocyanate-terminate prepolymers.

Conclusion

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

15. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BENJAMIN J. GILLESPIE whose telephone number is (571)272-2472. The examiner can normally be reached on 8am-5:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

17. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rabon Sergent/
Primary Examiner, Art Unit 1796

B. Gillespie